United States Department of the Interior
BUREAU OF RECLAMATION

SOUTHWEST REGION
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DEC 6 1978

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who to see?

12/13

12/19

Memorandum

To: Regional Director, Fish and Wildlife Service, Denver, CO

From: Regional Director

Subject: Results of Alternatives Negotiation of November 7, Closed Basin Division, San Luis Valley Project, Colorado

Jerry — Discuss this with Don Stewart. Review with staff at our next meeting

We have summarized the discussions and agreements of the subject meeting and are enclosing a copy of these findings. Also enclosed is a non-edited copy of the subject meeting minutes as transcribed by a stenographer. While these minutes contain some inaccuracies, they are considered to be representative. Please review these minutes and the summaries, and contact us for any recommended changes. Upon your concurrence on the content, we intend to forward a copy of the minutes to the Colorado Division of Wildlife, representatives of which were invited but were not able to attend the meeting.

I consider that the November 7 meeting was productive and can lead to meaningful action. The participation by personnel from your office is appreciated.

Robert H. Weimer

Enclosures

cc: Field Solicitor, Amarillo, TX
Area Supervisor, FWS, Salt Lake City, UT
Commissioner, Attention: 700
(each w/c enclosure)
Chief, Division of Planning Technical Services, Engineering and Research Center, Attention: 700
Planning Officer, Albuquerque, NM
Ben Morrison, Alamosa, CO
S-200, -400, -700
(each w/o enclosure)

DEC - 8 1978

Summary of Meeting Discussions

1. The Bureau of Reclamation (BR) personnel opened the meeting with a review of the advance planning schedule, the identification of three issues for resolution, and the comparison of past and present plans for the project division.

2. Fish and Wildlife Service (FWS) and BR personnel discussed providing fish habitat in the conveyance channel.

3. FWS and BR personnel discussed the identification and inventory of wetlands, particularly vegetative indicators. The FWS earlier estimate of 100,000 acres of wetlands was compared to the BR current estimate of about 40,000 acres of wetlands within the project division.

4. Past and present hydrologic conditions in the San Luis Valley were discussed.

5. The potential yield of waters salvaged by the project division, particularly regarding deliveries to a Mishak National Wildlife Refuge (NWR), was discussed.

6. The availability of surface waters and ground water for a Mishak NWR was discussed.

7. The exclusion of salvaging 15,200 acre-feet per year (ac-ft/yr) of surface water by the project division was again discussed.

8. Ground water availability for a Mishak NWR was again discussed, and the concept of exchanging surface waters for ground water.

9. A reanalysis of the inventory of wetlands and the mitigation of impacts to those wetlands was agreed upon, specifically for a Mishak NWR. The FWS personnel will try to locate the analysis documentation that led to recommending the establishment of Mishake NWR as a mitigation measure for project division impacts on 100,000 acres of wetlands. The time necessary for reanalysis was discussed, and two weeks was decided on for the FWS to estimate the funds and time required for a reanalysis.

10. Section 104(b) of the authorizing legislation (Public Law 92-514) was reviewed concerning the priority for deliveries of salvaged water. The BR will request a formal opinion from the Amarillo Field Solicitor addressing proportional deliveries. The FWS would probably ask the Office of the Secretary to withhold action on the BR Draft Environmental Statement (DES) until the question of proportional deliveries is resolved.

11. The maximum of 5,300 ac-ft/yr of water for delivery to Alamosa NWR was identified as being considered as a mitigation measure by the FWS for crossing the refuge with a 6-mile long, man-made conveyance channel (FWS memorandum of June 8, 1970).

12. The conveyance of salvaged waters through Alamosa NWR was discussed, with BR personnel identifying foreseen water quality and quantity accounting problems if natural drainage areas were used. Three recent (1977-78) alternatives for conveying salvaged waters through or past Alamosa NWR were reviewed:

a. use of natural drainage areas with depletions to the salvaged waters not to exceed 5,300 ac-ft/yr,

b. use of a man-made conveyance channel across the northwestern portion of the refuge, with the delivery of salvaged waters to the refuge not to exceed 5,300 ac-ft/yr, and

c. a routing of the conveyance channel completely around Alamosa NWR, without the delivery of any salvaged water to the refuge, except as an enhancement measure.

13. The FWS personnel did not believe the water quality and quantity problems would be major, if the conveyance of salvaged waters would be by natural means through Alamosa NWR. The BR agreed to contact the Rio Grande Compact Commissioners to determine their views on changing the point of delivery and measurements of salvaged waters (from the Rio Grande to a point in the northern portion of Alamosa NWR).

14. Flexibility for the delivery of salvaged waters to Alamosa NWR was discussed. The BR will raise the question with the Field Solicitor concerning higher deliveries than 5,300 ac-ft/yr during dry years and conversely less during wet years.

15. Transfer of salvaged water or water rights to Monte Vista NWR was mentioned as a possibility in lieu of the delivery of some waters to Mishak or Alamosa NWR.

16. The Mishak and Alamosa NWR issues and agreements on future actions were summarized at this point in the meeting. Agreements were made for cooperative FWS and BR reviews of wetlands and hydrologic data analyses.

17. The FWS will discuss fish habitats in the conveyance channel with the Colorado Division of Wildlife.

18. The BR will rewrite those portions of the DES concerning unresolved issues and forward same to the FWS for review. The BR will also try to obtain a timely opinion by the Solicitor on the priority of deliveries of salvaged water. The BR wished for the DES to be filed by January 1, 1979 but FWS personnel felt that a favorable Solicitor's opinion on delivery priorities was necessary before the DES would be released from the Office of the Secretary.

Agreements Made at the Meeting

1. The BR will:

a. Request the Solicitor's legal opinion on the intent and language of Public Law 92-514 regarding the priority of deliveries for salvaged waters, and the flexibility of wet and dry year operations for deliveries to Alamosa NWR (forwarded November 24).

b. Request the Rio Grande Compact Commissioner's views on the point of delivery for salvaged water, citing the alternatives for the conveyance of salvaged waters by natural or man-made means across Alamosa NWR (forwarded November 27).

c. Consult with FWS on wetland and hydrologic data analyses (reviews scheduled in Amarillo, Texas, for December 12 - 14).

d. Rewrite portions of DES concerning unresolved issues and provide same to FWS for concurrence before filing the DES with the Office of the Secretary (DES rescheduled to be forwarded to BR Commissioner by January 5, 1979).

2. The FWS will:

a. Search for documentation of the inventory and mitigation analyses for 100,000 acres of wetlands (BR notified of unsuccessful search November 27).

b. In two weeks (from November 7), prepare and furnish to the BR a cost and time estimate for FWS re-analysis of wetlands and mitigation measures involving a Mishak NWR.

c. Consult with the Colorado Division of Wildlife on the installation of fish habitat for a put-and-take conveyance channel fishery.

d. Consider reserving objections to the DES, pending the Solicitor's opinion on priority of deliveries.

e. Consult with the BR as above on wetlands and hydrologic data analyses (scheduled for December 12 - 14).

D R A F T

MEETING BETWEEN U.S. FISH AND WILDLIFE SERVICE AND U.S. BUREAU OF RECLAMATION

ALTERNATIVES NEGOTIATION
CLOSED BASIN DIVISION
SAN LUIS VALLEY PROJECT, COLORADO

Engineering and Research Center, Denver, Colorado
November 7, 1978

The meeting between representatives of the U.S. Fish and Wildlife Service (USF&WS) and U.S. Bureau of Reclamation (USBR) began at 9:40 a.m., November 7, 1978, in room 678 of the Engineering and Research (E&R) Center. The following representatives of the two agencies were in attendance:

USBR Representatives

Darrell D. Mach, Regional Planning Officer, Amarillo, Texas
Jack S. Sanders, Division of Planning, Amarillo, Texas
Gene Bass, Division of Planning, Amarillo, Texas
Lee Buettner, Regional Hydrologist, Amarillo, Texas
Warren Weber, Area Planning Officer, Albuquerque, New Mexico
Warren Dunkin, Division of Planning Technical Services, Denver, Colorado

USF&WS Representatives

Jim Young, Area Supervisor, Salt Lake City
Robert Freeman, Salt Lake City, Utah
M. G. "Red" Sheldon, Area Office, Salt Lake City, Utah
Donald G. Stewart, Denver, Colorado

MR. MACH: Let me kick off with a little setting of the stage. We are in the process of putting together the Draft Environmental Impact Statement and the Definite Plan Report for the Closed Basin Project. We have been in the advanced planning stage for 2 years, and we are going into our third fiscal year. In the bill that was finally passed through Congress and signed by the President, it did include $0.5 million for continuation of advanced planning and $100,000 for initiation of construction on the Closed Basin Project.

We have to complete the EIS and have a Definite Plan Report approved by the Commissioner and the Secretary. Once we fulfill those requirements, we are free to initiate construction. We are, as I said, in the process of putting together the DPR and the draft EIS. We have put out for review a preliminary copy of the draft EIS on which you have provided some comments. We would like to use some of those comments as the basis for discussion today.

There are three issues, water supply for a Mishak National Wildlife Refuge, the location of the conveyance channel in relation to the Alamosa National Wildlife Refuge in Colorado, and a conveyance channel put and take fishery. These will be the three issues we would like to talk about today and try to reach some agreement on how we are going to handle these issues.

I have a particular schedule that we have put together that allows us to initiate construction within FY79, and that is a very tight

schedule, so what we are suggesting today is that if we cannot reach agreement on any of these or all of these, then we are proposing that we forward the areas of disagreement to the Washington level for resolution at our Commissioner's Office and your Director's level and then up to the Secretary's Office to come up with a decision and what will be done. So we really need to focus in on these things today and we need very definitely to try to reach some kind of agreement. Obviously, we would rather try to resolve the issues at this level.

The basis of authorization is essentially what we generally refer to as the "green book." It's the last document printed and contains our original report and a series of letters and also then the Fish and Wildlife Coordination Act Report of 1969. On this basis, the project was authorized. It was authorized in the 92nd Congress in 1972. The Act essentially says "The Secretary of the Interior is authorized to construct, operate, and maintain the Closed Basin Division. . ." and then it gives a statement of purposes, ending ". . .in substantial accordance with the engineering plans set out in the report of the Secretary of the Interior on this project," and the plans they are talking about is this report that was printed up here as an entire document.

What we would like to do first off is to review the mitigation and enhancement aspects of the project as they were initially set out in the green book and then to contrast that to the work and the data we

have gathered in our 2 years' of advanced planning. Then we want to try to determine if we can reach some resolution on these three issues. With that kind of setting, I would like to turn it over to Jack and let him lay out what was originally set out as mitigation and enhancement features in the green book.

MR. SANDERS: The plan for Alamosa as we understand it was to take 5,300 acre-feet a year as mitigation for crossing Alamosa Refuge. This consisted of a 6-mile-long conveyance channel along the eastern side as a mitigation feature.

The other mitigation feature was for Mishak. On Mishak, as we understand it, this is a mitigation feature for the impact on around 100,000 acres of seasonally flooded wetlands. Mishak would consist of 13,800 acres and annually not to exceed 12,500 acre-feet - 8,500 is the western segment and the eastern is the remainder of the 13,800. Again, from the Fish and Wildlife Coordination Act Report for Mishak particularly we have 100,000 acres of seasonally flooded wetlands. Net figures for mitigation this would involve losses of 2,600 man-days upland game hunting, 1,200 man-days waterfowl hunting, 12,000 waterfowl (ducks), and a loss of 500 man-days of wildlife-oriented recreation. That 13,800 and 12,500 were to provide for those losses. Then you get into this enhancement/ mitigation scheme as sort of an incidental scheme. You could say because Mishak was there it has taken care of these losses.

Our third issue was a conveyance channel fishery in the 1963 report, plan and development was called for by the Bureau of Reclamation. The idea and intent was as an enhancement feature to put in 10-inch rock or cobble along 25 percent of the length of the channel (that's cobble one-half mile of every 2 miles). This is to provide recreation places and fish habitat. This would be a put and take fishery and it was intended to be an enhancement feature.

Now we will go to what we think now, after 2 years of advanced planning studies. There are some changes as we see it. Once again on Alamosa, instead of the 6-mile channel along Hansen's Bluff, we are proposing to enter the Alamosa Refuge with a channel at the northwest corner, entering at elevation 7518. Of course, we are well aware of the FWS desire to go ahead with the 6-mile channel.

On Mishak, all of the stage 5 area which includes the eastern segment, we don't see that 12,500 acre-feet a year as being available there either from ground water or surface water. We see from the ground availability of around 4,410 for the western segment and around 2,350 for the eastern segment of Mishak and for all of stage 5, which includes the eastern segment, around 5,930 acre-feet a year. Our data are not conclusive. This is what we can document and substantiate as our best guess. Briefly, this is based on hydrographic data.

We do have this problem of being authorized for stage 5; the well permits are for stage 5. The applications for water rights only

include stage 5. There are some pretty bad problems as far as whether you can go outside or not.

MR. MACH: The authorizing act authorized us to drill wells and pump water from stage 5. It authorized us to acquire the 13,800 acres but not necessarily to drill wells in all of Mishak. That is an unofficial type of opinion from our legal people. We will get into this in more detail later.

It's just an overview now. Part of this 100,000 acres of seasonally flooded acres was due to the capture of 15,200 acre-feet of surface water. To capture it you would have a drain flow, Spring Creek, and evaporation reduction. The evaporation reduction meant that you would physically go out there and drain and put in a drain at various depressions and run it right into the conveyance channel. The same with the drain flows that came mostly in the centermost core area. Our present plan is that we do not have any of the surface water salvage. We do not have the drains. Part is because of the President's Executive Order. A lot is there is no water there, not a dependable supply.

Another item in the original plan was essentially two channels on the east and west that would deliver to the Rio Grande. We are excluding the east side channel and have realined the main channel as essentially one channel goes down San Luis Lake and skips around the lake and down to the Rio Grande.

While I am on comparisons of the well fields, essentially in stages 1, 2, 3, 4, and 5 you had a concentration in 1 and 2, relatively few along the channel in 3 and 4, and another concentration in 5. Now, as we see it, based on around 25 holes drilled and completed in March of this year, we are seeing the best productivity on a separated area in 1 and 2, all of 3, all of 4, and a piece of 5. It's physical characteristics - how fine the sands, how tight, the amount of clays. We are changing well fields from the 1963 document and conveyance of the channel system.

On the conveyance channel, we are now proposing, because this is a put and take facility or fishery, that there not be any rock cobble in the bottom. We are questioning the viability of the fishery and having problems with a sponsor on maintaining this thing that can be subscribed to 8972. We are into negotiations with the Colorado State Parks. With the Colorado Division of Wildlife their position is yes, they will furnish $18,000, but they will not enter into any 8972 agreement for going in and maintaining. We really don't have anything against a conveyance channel structure, as long as it is viable, if somebody will manage it. There are some other means we think will operate without cobble. Check structures is one.

I believe that's it on what was originally proposed in 1963 and the way we are looking at it now.

MR. YOUNG: Right now, you are having problems with a sponsor. You mention the fact that you are having a problem, but so far you have

not picked up a sponsor to pick up the operation and maintenance. You also mentioned here that in lieu of cobble, if you pick up a sponsor, something about check structures. I just am not sure what you are saying.

MR. SANDERS: As I understand the cobble, if you have a profile of the conveyance channel and you have some cobble along, if we have an unlined channel or even an earth-lined channel (and it is not worked out entirely yet), we would envision 10 to 15 check strucutres. There will be maintenance done in the channel and a portion would be knocked out one month out of every year. Water would pond behind each structure to provide life for the fish. We are suggesting that the check structures would do the same as the cobble if operated properly. The conveyance channel is 2 to 5 feet deep for its entire length, water depth. The San Luis Lake you are speaking 3 to 5 feet from the south.

MR. MACH: On the structures, you would check almost to the normal water surface. The problem is if you dewater the canal. It's better to keep water in the canal to the extent you can than to dry it up and leave it totaly empty. The check structures would allow us to do this and yet do maintenance. If the normal is 5 feet, it would be 4 feet at the check structure. It would tend to feather out as you go upstream. The check structures would be designed so we can maintain whatever water surface at the structure itself. If the channel is at full capacity, we would be doing no checking.

MR. YOUNG: What is the distance between the stations?

MR. SANDERS: About 3 to 4 miles. That is for the maintenance requirements. There would be some resting spots when you have free flow or full channel conditions.

MR. YOUNG: For information purposes, what was the maintenance on the cobbles or cost for the maintenance program on the fishery?

MR. SANDERS: I do not have that number, but around $700,000. We are worried about the sediment that builds up around the cobbles. We are worrying about maintaining the cobbles, adding more to them as well as cleaning around them.

MR. MACH: We do know that from practical experience in other canals on this type of situation with windblown deposits that those cobbles will get covered up and it's extremely hard to go in and clean them out. Maintaining of cobbles, always keeping the sediments out of the cobbles, is the difficult part of that particular scheme. We have no real practical way of cleaning them and it would probably be almost a constant maintenance problem. One of the reasons for check structures is that we do know we are going to have to go back in the canal and take the sediment out, but by drying them up and making the section dry, we can go in and take the sediment out very easily. But if we have to handle the cobbles too, it just makes more of a maintenance problem.

We would have to have a maintenance road, single or double lane, parking, sanitation facilities, etc. The Division of Wildlife says yes, San Luis Lake or the conveyance channel they will take care of measuring the fish, stocking the fish, and the game wardens, but as far as cleaning up the trash around the parking area and sanitation, no they will not.

MR. YOUNG: You mentioned 10-inch cobbles.

MR. FREEMAN: Would there be any objection to the use of larger boulders?

MR. SANDERS: That has been suggested by the Colorado Division of Wildlife. It's an alternative. Whether it would do any good, I don't know.

MR. MACH: The other problem is these boulders would increase the friction loss and the amount of head.

MR. YOUNG: On a full head, what velocities are you talking about.

MR. SANDERS: Maximum of 1.1 foot.

MR. YOUNG: Is this normally silty water that enters the system?

MR. MACH: Most of the sediment would be simply the blowing of dirt across the canal.

MR. FREEMAN: Is it possible that these areas could be identified, the areas you suffer the windblown silt?

MR. MACH: It's pretty well the full length of the canal, and it's going to be transported down the canal as well. We anticipate the sedimentation would be the full length of the canal itself.

MR. SANDERS: The last thing I did wish to say, in our environmental statement I am sure you notice, and it has been noticed in the comments, rather than the 100,000 acres, we are indicating by LANDSAT around 39,820 of ephemeral wetlands. We have contracted with the USFW&S National Wetlands Inventory to also run their analysis of the wetlands. Also, we have contracted in-house for some low level color work at a scale of 1 to 12,500 and 1 to 80,000. The LANDSAT is a base. There is a disparity between this and the 100,000 acres. Those are the major differences.

MR. STEWART: The inventory that came up with the 100,000, what were the climatic conditions as opposed to the development in the basin? We could go in and take a survey now and it might show a condition that exists today but how would you compare it as to what existed 40 or 80 years ago? This is something that really bothers us that we have noted in recent years that a lot of the areas have dried up so to speak, but in wet cycles they come back if there isn't considerable development of the water supply.

MR. BASS: I might comment on that. This is based on vegetative types we would see there, not necessarily where we see water.

MR. YOUNG: When will the wetland study be done by our service?

MR. BASS: It's supposed to be done this fall. They have extended it. I believe the State of Colorado is doing the survey. They seem to be confused as to their priorities.

MR. SANDERS: It's a very good point.

MR. BASS: They have subcontracted the ground truth and interpretation of the aerial photographs. We have a fall flight and we have a spring flight.

MR. YOUNG: Then the plans are to make a comparability between that and the LANDSAT?

MR. BASS: Hopefully, we will have at least three approaches.

MR. SHELDON: Are you going to relate to the lack of precipitation in the San Luis Valley? If you are just going to fly CIR for surface water, it's difficult now and has been for the last couple of years.

MR. BASS: The open water.

MR. FREEMAN: The well soil conditions if you have a wet year and primarily we look for the wettest year so we do not miss any wetlands.

MR. MACH: Do you mitigate for the wettest year that might occur once every 20 years or the average? That is where we need to reach some conclusion.

MR. BASS: I think we will acknowledge that open water is going to vary from year to year and during the wet years we are going to have more open water than during dry years. We have a range manager that is doing the vegetative studies and he doesn't feel there is going to be much change, that the vegetative will be established. We think we can come up with a reasonably good effort of what the potential is based on vegetative types. We have not been able to find anything that will tell us what the 100,000 is based on. There is some disagreement of the importance of greasewoods and rabbitbrush as an indication of waterfowl. I think, as far as in terms of vegetation, it will tell us fairly accurately.

MR. STEWART: I don't know if it will or not. When you get into an area with high wind velocities, high sediment loads in the area, you can mask the vegetative area. The smaller grasses that would have noted a pond area will be completely (masked) covered How are you going to identify these?

MR. BASS: I don't think that will occur. These will occur but I don't think you are talking about a spontaneous change. A lot of areas are being maintained now by high water table levels. What we see isn't necessarily always because of surface water, it's because of very high water tables. These things will maintain and continue to have salt grasses, these depressions, but in wet years they may receive enough water off the watersheds to provide some value to waterfall. We don't know. We are guessing once every 10 years.

MR. MACH: One of the real difficulties is we can not find out where the 100,000 acres came from.

MR. YOUNG: We couldn't find anything anyplace we looked.

MR. BASS: We requested that data and somebody looked for it and they couldn't find it.

MR. YOUNG. We haven't found anything, but there may be some other avenues yet.

MR. BASS: It really boils down to how you treat those greasewood, rabbitbrush areas. I don't think you can really argue over the ephemeral areas. It may be how you address the greasewood, saltbrush hummocky areas.

MR. YOUNG: This 39,820 acres that you picked up from LANDSAT, that did not include these particular areas?

MR. BASS: I think it's about 33,000 ephemeral. That is based on the extent of saltgrass. It is a vegetative analysis of the area with ground truthing too, areas with alkaline flats, those kind of areas that would show up. It's not reliable production, Red.

MR. YOUNG: That may be the case. We are looking over an average annual period of analysis on that thing, and it should be if it's 1 in 5 or 1 in 10, it would be on an average annual basis.

MR. BASS: I have difficulty visualizing greasewood and rabbitbrush as being prime waterfowl habitat. Greasewood is a desert plant, so it becomes difficult to classify it as a wetland area. We are talking about an 8-inch average rainfall in this area.

MR. FREEMAN: What about the year you get 13 or 14 inches? We get our best production during the high precipitation years. We have to take our chances with nature now. We get high productive years. Some years they get caught.

MR. YOUNG: What percentage are we talking about, of the 100,000 or whatever figure we are talking about, is exposed of the rabbitbrush greasewood?

MR. BASS: The other 60,000.

MR. YOUNG: I think we can show some value of those, depending on wet years, from some of the studies just mentioned. I will agree that it's not an annual basis that could be whatever your scale would show. Over the long haul we can show production and value as a waterfowl area.

MR. SANDERS: This is freestanding water originating from surface water. We do not intend to salvage surface water.

MR. BASS: On greasewood we have a report from a longtime resident of the valley who is a vegetative expert and his comment was that historically the valley has been drying up. There has been no

change with the greasewood or the rabbitbrush. It has remained the same. These things have two characteristics. They have a root system at the surface which will tap the surface water. They also have a very deep taproot that will follow the water down almost in excess of 20 feet. His point is that it has not changed through the years as the valley has dried. He is an agronomist.

MR. BUETTNER: We are missing a big point. the wetlands don't essentially come from the rainfall in the area itself. Those wetlands, the majority come from what used to be waste water from the irrigation and the drain flow.

MR. SHELDON: And also a high water table all through that country.

MR. BUETTNER: There was a high water table, that's true, but from the data I don't believe that has much to do with it. There was a lot of water coming from the drain flow. The hydrology of the basin has changed. They are on sprinkler irrigation. The last 6 or 7 years they are having problems. They are efficiently irrigating. That is why we are not going to salvage any surface water because there are no surface waters left to salvage - anything that would pay us to try and get it on an economical basis.

MR. SHELDON: You are saying that the 40,000 acre-feet of wetlands isn't going to be economical for you to try to salvage that much water?

MR. BUETTNER: That's 40,000 acres of ephemeral wetlands.

MR. BASS: We are taking about 8 feet or less if we are talking about salvaging.

MR. BUETTNER: Those years were not all that much wetter. They were wasting water 10 years ago. Now that is not a fact of life anymore.

MR. SHELDON: Until we pay back the Compact and then it's going to be.

MR. BUETTNER: No.

MR. SHELDON: They are going to have to do something to recharge that.

MR. BASS: One of the problems we have run into is that Colorado is a little bit concerned about the future of the valley because if we take our project and we move out, it's our understanding there are 100 and some odd well applications pending to pump that water out if we leave. Also, there is a plan that Pete Bryant brought to light to utilize the water in Head Lake for irrigation. If we move out, it would appear that this is going to be pumped anyway and below 8 feet. If we leave and don't do this project, then the State of Colorado is going to award that water to somebody else.

MR. SANDERS: Let me correct you one time. We are going to lower that a minimum of 8 feet below the ground. We have many more constraints than the irrigator will have.

MR. BUETTNER: We feel there is never going to be the situation of 20 years ago. The situation as of now is about what it will be.

MR. SHELDON: If we have a wet winter and spring down there, are you going to go back to the old one?

MR. BUETTNER: We are not going to salvage any so-called surface waters.

MR. MACH: The reason we are knocking out salvage of surface waters, we are saying that there is no reliable surface source there that we can economically salvage and there will not be in the future. We may have 1 or 2 years that are wet, but there are going to be more dry years than in the past due to restrictions on pumpers, etc. The wetness of the valley will never go back to 20 years ago when this report was originally developed. Therefore, we cannot economically salvage that water. We say it's going to decrease, it's never going to be the same as it was based on our long-term hydrologic studies. There may be a wet year or two, but also tied to that will be say 20 dry years.

MR. SHELDON: But if it does, you are going to take the water and put it in the project?

MR. BUETTNER: We do not have the facilities.

MR. MACH: We will not design the channel to accept any surface inflows.

MR. FREEMAN: There is no distinction between surface and well water on that? All 12,500 acre-feet will come from salvagable waters?

MR. YOUNG: I am just trying to get back, Red, is there a possibility between the 40,000 figure and the 100,000 figure that a lot of that was the rabbitbrush greasewood habitat?

MR. SHELDON: Yes. One says it's all from rainfall. It used to be there and . . .

MR. YOUNG: If it still comes from a surface water, and that is the main basis whether those things are wet, then with or without the project if you are not taking that we are not having any loss? We want to take a look at that particular thing. If your analysis is correct, we will have to concur.

MR. BASS: Greasewood is more characteristic in areas of 5 feet or more to ground water. The salt grasses and greasewood mixes are in areas where the depth to ground water is 5 feet or less, in areas where the ground water is very close to the surface.

We think there is a very good relationship between these types of things. We think particularly the salt grasses are very good indications as well as the depth of water table and our knowledge that says they are very good. If it's more than 5 feet, we find arid types of plants.

MR. BUETTNER: We have measured some of the low-lying potholes.

MR. SANDERS: I would like to mention one thing, perhaps maybe we could focus on particular issues and rank them according to the most important thing and focus on the most important issue to you?

MR. STEWART: Before we do that, I have a question. If you go in here with this project and pump all these wells and lower the water table 8 feet, maybe 15 to 20 feet in high water drawdown, then, of course, this ~~should reach out as far as the water table and pull~~ would affect any surface waters/sheet flow available for recharge that with the higher water table would have ~~been~~ on the surface. Of course, the timing on this without studies you would not know. Still, I can see where you want to jump this inflow from surface waters not only the dry and wet year cycle. It's going to draw your surface waters in.

MR. SANDERS: It's similar. The evaporation overwhelms any infiltration of the surface waters back in the water table.

MR. STEWART: I am talking recharge areas.

MR. SANDERS: Again, the recharge areas are pretty much along the flank of the mountain.

MR. MACH: One aspect is the limitation that we cannot pull the water table more than 2 feet. We are not going to be pulling it 10 feet or more, just 2 feet. It would have some affect but very small.

MR. STEWART: But when you start talking about the small affects and start adding them up, you get a salvagable water supply for the project. The refuge is there to replace environmental affects to this entire area that is to be affected by drawdown. I think the 39,000 is really a drastic cut from what was really available in the early days from studies, even if it was above average years that they were available.

MR. MACH: Again, we are coming back to the question on the 100,000 versus the 40,000. We don't know the 40,000 is an accurate figure either. If a wet year occurs once every 20 years, that really isn't what you are mitigating. You are mitigating an average between the dry years and wet years.

MR. BASS: We really are not talking about a reduction in Mishak based on whether it's 40,000 or 100,000 other than what we see is available. We are not trying to reduce it, but we are merely looking at it as that is what we feel is realistically available to be pumped. We would rather not get into an argument of whether it is 100,000 acres or 40,000 acres. We are not going to be salvaging surface water, so what becomes important is what can the Bureau realistically furnish to Mishak?

MR. STEWART: Averages don't work really with wetlands. With our management we are finding out that wet and dry cycles are best for production. My question goes a little further. Say that you develop this salvage area and low and behold in 5 years you are only

salvaging, because of the development in the area, 40,000 acre-feet, then down to 30, to 20, did you take that to mean we are going to lose the water supply to Mishak?

MR. MACH: We cannot really give you an answer to that.

MR. STEWART: We may end up walking away from it?

MR. MACH: We are proposing to construct stages 1 and 2 as a single unit. We may find out after a year that we cannot pump it and then walk away from the project. We would not like to think of that as a real possiblity, but it is there. I cannot give you a definite yes or no answer.

MR. YOUNG: That could be a significant change from the original concept as sent to Congress. Somehow, and I only glanced at the draft EIS, we talk about there is a minimum and a maximum, but somehow I didn't really read or didn't read deep enough, you are talking variance, but the overall tone isn't that there is a significant reduction.

MR. MACH: We feel we still have a viable project and that as we collect additional data it will become more apparent. If we do find out by some quirk of fate - ground water is a very nebulous thing - if something happened and the project was not viable, we would have to go back to Congress and say what we told them was wrong and ask where we go from there. The decision could be made that we stop the

project. We wrote the EIS in the sense we still feel there is a viable project and we felt we had to address the impacts of the total project as though it were going to be a real entity.

MR. FREEMAN: If you go in and construct only stages 1 and 2 and find it's not a nebulous project, then the mitigation features which have been authorized are out?

MR. MACH: I couldn't really say. We would have to go back to Congress and the Secretary and somebody would have to decide what is out. Nobody has ever addressed that issue, and I don't think we want to address it at this time because we don't think it will happen.

We took the east side conveyance canal because we found we could do the same job with a single canal that we could do with two based on more data and analysis.

MR. YOUNG: What we are coming down to if there is no decision to reduce Mishak, it's a matter of discussing the merits of how much water can be supplied, and your analysis of why that can be supplied.

MR. SHELDON: They told us at the last meeting that we were down to 4,500 feet for Mishak. They have already decided it's reduced. There is no way they can provide 12,500 acre-feet for Mishak. The project has not been reduced in any amount. They are still figuring on 100,000 turned into the river without providing the mitigation

water for the Mishak Refuge. They already said there is no way without pumping the water clear back up there that they can provide the water. But you have not reduced the project and what you are going to pay back to the Compact.

MR. BASS: That is not entirely true. We are not going to attempt 15,200 surface. It may go down as low as 60,000 as the baseline that we are assuming that we may not salvage more than 60,000. The thing is to go in in stages and each stage determines what is to happen in the next stage. We are saying that the baseline is as high as 6.

MR. MACH: Let's start from the top. Let me very briefly go through the evolution. We can go back to the Fish and Wildlife Coordination Act that was put out in September 1969. It talks in there about a controllable water supply of 8,000 acre-feet of consumptive should be obtained from the well field in lieu of surface water in exchange of well water. The Mishak water supply would be the overflow from Russell Lakes. Those flows were not uniform every year and it made management very difficult. The agreement was they would take well water in lieu of the surface water. It even talks about going to a debit-credit status. The water supply from Mishak would be the surface water from the Russel Lakes area and because of the management, they would take well water in lieu of surface. There would be a record kept so that if one particular year the natural water was low it could be repayed during high inflow years out of Russel

Lakes. This then in essence, by the Secretary through the Administration in his letter which was dated June 8, 1970, transmitted it to the President. It says that "The plan will provide for the development of the proposed Mishak National Lakes Wildlife Refuge. Its water requirements would be met by the natural inflow into the refuge." It also indicates there would be an average of 100,800 acre-feet salvaged annually and of that 5,300 would be supplied to Alamosa and the remaining 95,500 acre-feet would be delivered to the Rio Grande. It was intended none of the salvage would go to Mishak. This is the basis on which the project was authorized.

MR. SHELDON: Cover just a little bit more this exchange of the surface to the well water. There was a letter sent to the Bureau of Reclamation and we talked about it before where we were to get no salvaged surface water at all and all was to be replaced by pump. There was an exchange and it was exchanged in that memo.

MR. MACH: We don't disagree with that. The exchange was made. Now we are saying there is no surface water there.

MR. SHELDON: We are saying you guys lost your surface water.

MR. MACH: If that is the situation, then we cannot have a viable project because we cannot deliver 12,500 acre-feet. The Secretary said 100,800 acre-feet annually - 5,300 acre feet to the Alamosa Refuge and 95,500 to the Rio Grande, that was the basis on which the

Congress authorized the project.. If, out of the 95,500 we have to take 12,500 acre-feet, we do not have a viable project.

MR. SHELDON: It doesn't come out of that figure at all. Over and above the Mishak Refuge they were to salvage 100,000 acre-feet of water, and out of that Alamosa got their share.

BUETTNER: That it was under the same premise. There is no surface water. We will agree that the amount of surface waters still available in the Mishak Lakes we will pump an equivalent amount of ground water and we will take the surface water which was straight off the surface in the first place.

MR. YOUNG: Minus that amount, are you still trying to maintain the same amount under the exact agreement and then picking up the loss or are you reducing the whole project appropriately?

MR. MACH: What we are saying is that the original was to exchange ground water for surface water. Proper operation requires a controllable water supply, a one on one exchange.

MR. STEWART: Are we talking about Russell Lake? Isn't Russell Lake substantially recharged from spring flows, natural spring flows? I could be wrong.

MR. BUETTNER: Some. This was not only Russell, accounting for all the surface flows that were made available. That is why this arithmetic came out this way. Our original plan was not to pump

water to the Mishak. Any waters that were available in the area would come into the Mishak area. The FWS would develop on their own. We had our plan. Some was there and some was additional surface water up and down the line, then came the 1969 report. The FWS said this isn't a dependable supply, so let's exchange ground water for surface water on a one to one ratio. If there is an exchange on a one to one there is no reason to change the arithmetic on the rest of the project. We are not really salvaging any surface water as such. We are just exchanging.

MR. STEWART: Because of the tremendous well developments in the valley completely along the west side, it has pulled down the water in the recharge areas so that as the streams flow out into that Russell Lake area in the spring they end up recharging along that area instead of coming on down into Russell Lake and into the stream, and it has been lost through the ground-water development. How can you now go to this document and say there has to be an exchange? The natural supply is still there.

MR. MACH: What we are saying now is that the conditions have significantly changed. We can no longer provide that 12,500 because there is no water available at that magnitude.

MR. STEWART: If they exchange water not available, then you are saying that the refuge has to take it on the cuff so to speak?

MR. MACH: At least some of it. That is what we are asking.

MR. FREEMAN: On page 2 of the green book, third paragraph, last sentence, the Secretary's report to the President, "The enlarged refuge would take all its water requirements from the salvage system, and surface flows previously planned for the refuge would be salvaged." In other words, the refuge is is to get its water from the salvage system.

MR. MACH: We are disagreeing with the quantity. We are saying the conditions have significantly been changed on the entire project.

MR. YOUNG: I guess the question I have is if we have made an overestimate of the water availability, I guess our opinion is we don't mind a propritonate share of the reduction as long as it is an equal share, then it's a matter of finding the whole. The impression is that because there is less water available, that the first place to bang is Mishak Refuge.

MR. MACH: I would go one step further and say also that the need of Mishak and the size was based on impacts evaluated at that time. We have also significantly changed the project; therefore, we are also saying that the mitigation should be proportionately less because we are not damaging or impacting to the same degree had we built the project at the original time.

MR. YOUNG: I thought that is what you were alluding to, but then again you mentioned we have no intention fo reducing Mishak, so I

started thinking on another channel. Somehow we are not talking on the same key.

MR. MACH: What we are saying is because we have less impact on the project areas because we are not salvaging any surface waters and because the surface inflows have been significantly reduced by changed conditions in the vally, we are proposing that we also reduce the water supply for Mishak, that we cannot deliver the full 12,500 without significantly impacting - more than impacting, supplementing the rest of the project. Again, we go back to the EIS where we feel we can salvage at least 60,000 and hoping we can salvage 100,000 acre-feet, but because of the two conditions we feel there should be a reduction in the amount of water provided to Mishak Wildlife Refuge.

MR. YOUNG: If there is a reduction in impact, as you say, then that is open for discussion. But there seems to be a difference of opinion as to exactly what the impact is right now. Basically, it is that difference between us.

MR. SHELDON: As far as I am concerned it is the 15,000 acres that is the only difference in the project.

MR. STEWART: If this 15,000 is not available because of the well developments and Reclamation is saying why should they take it on the cuff. It is not available not because of our own choosing

but because of the well development that has gone on in the valley? Is that right?

MR. MACH: Yes.

MR. SHELDON: There is still some 40,000 acres of wetlands. There is still some 15,200 acre-feet of wetlands in there that has been planned for tapping, for draining, and they have decided they are not going to do that. They are going to leave that 15,200 to us. They are not going to touch those. As far as my analysis goes, that is the only real difference.

MR. STEWART: Is it because the 15,000 is not available?

MR. MACH: Not from an economical standpoint.

MR. STEWART: I got the interpretation that this was not available.

MR. MACH: In our opinion we feel things have changed in the valley. There is not 15,000 acre-feet in the valley anymore.

MR. SHELDON: What was this year's measurement?

MR. BUETTNER: I don't know. There are essentially no surface flows left in there.

MR. STEWART: It is not because of the dry years? How do you draw your conclusion that there aren't any?

MR. MACH: Increased efficiency in the past 20 years has reduced the amount.

MR. BUETTNER: There are lots of things. There is no drain flow, sprinkler irrigation which is efficient, the lawsuit that Texas and New Mexico have against Colorado. All of those things.

MR. MACH: Which reduced the amount of pumping.

MR. BUETTNER: The well development has changed the flow.

MR. SHELDON: Why will those wells pull the water table down to where there is no drain water and the rest of the wells aren't going to influence the surface?

MR. MACH: What we are saying is the State of Colorado has shut them off from draining because it is a more efficient operation. Previously they irrigated by gravity.

I don't think we want to argue why or what for or how come. What we are saying is we believe, due to increased efficiency in irrigation, we are no longer going to salvage surface water. It is not economical. That is the bottom line, whether you think there is any available. We don't intend to salvage it.

MR. SHELDON: The figure is that there is 15,000 acres that you are not going to salvage.

MR. MACH: That was the original estimate. What we are saying is we are no longer planning on that 15,000 acre-feet of surface water.

MR. SHELDON: What I am asking is how much are you going to ask us to reduce mitigation because you are not influencing or impacting X number of acres? You say we need to reduce. How much you are not impacting?

MR. MACH: What we want to arrive at today?

MR. SHELDON: How many acres are you going to impact so we know what we have to mitigate?

MR. YOUNG: They have a preliminary of 39,000 or 40,000 acres that could possibly be impacting, but based on the finalization of the wetland study and CIR and varification of these three, that cannot be done today.

MR. SHELDON: We can't do what you want to today then.

MR. MACH: We do have some numbers that we can play around with that we feel we could deliver to Mishak for initial consideration.

MR. SHELDON: By pumping to the refuge do you mean the proposal Lee had where you pump it from below or are you talking about pumping out of the ground within the confines?

MR. MACH: It could be either one.

MR. SHELDON: It makes a big difference.

MR. MACH: I am not sure why it makes a difference. I am having trouble understanding why the source is a problem.

MR. SHELDON: According to the figures we worked up years ago with 20 wells we can produce within the confines, we can produce the 12,500 acre-feet.

MR. BUETTNER: We have one well on the western edge of Mishak which we pumped for 4 or 5 days and we got 2 second-feet in alluvial material. The projection was that 2 second-feet was good for all wells scattered all over. The wells do have the capabilities of pumping 2 second-feet, but you cannot get 2 second-feet in perpetuity because the water isn't available to come in. You can get it for a day, but you cannot get over a period of time.

MR. YOUNG: We would be concerned with what kind of a viable supply we got. You mentioned something about other pumping in discussions.

MR. SHELDON: Let me make one final remark about the pumping. By pumping our wells producing 2 cfs, this produced not 12,500 acre-feet but 50,000 acre-feet.

MR. BUETTNER: You can put in a million wells.

MR. SHELDON: They don't have to be pumped every day is my point.

MR. YOUNG: What I am reading from what they are saying is that based on their analysis, they did one test well.

MR. MACH: Here is the problem, if you put the well in and you start pumping it and pumping it for 1 day you may pull it down here and then you pump it the second day and pull it down and you may be out of water. You have to stop pumping to allow to allow it to fill back up again. The true limitation on the capacity of the well is the ability of the water to flow through the material. A 1-day pumping test does not give you that information. What you are looking at is a long-term dependable water supply and we are saying these wells in these areas probably cannot put out 2 cfs.

MR. YOUNG: Are these the figures you are estimating now as available now through ground-water pumping?

MR. BUETTNER: Our guess is if we dewater the area and lower the water table enough so there is no more consumptive use, we will maintain a level here and the water will flow from underflow in here at this rate. You can pump at 2 second-feet but you are limited to a yield of 4,400 acre-feet a year on the western section.

MR. SHELDON: We are limited to that much only if the mitigation is reduced to that.

MR. YOUNG: You said something about a figure you were going to talk about.

MR. MACH: The 4,400 is our best estimate right now of what the western portion would yield on a long-term basis. If you put down

the right number of wells properly designed you can get 4,400 acre-feet based on the additional information we have from other areas.

MR. BUETTNER: There is a limit to the amount I am pumping out of a well. That is what our 4,400 is based on.

MR. YOUNG: We are talking some engineering things here. Is it possible you can show us the data you used? We are biologists here, but We do have people who could take a look at the data.

MR. FREEMAN: What is the total figure available from Mishak Refuge?

MR. MACH: If you take the area within Mishak, that would be the 6,800 acre-feet.

MR. YOUNG: To get some meaningful progress going, there is some information to support this and I think if we will review that to see whether we may have some suggestions for some further things or whatever. We do know the physical limits. We have another portion we have talked about here, is that based, we will not be taking the surface water. On those studies, assuming surface water if it will not change on those areas that we have water periodically does not change, then we are looking at a figure here. Assuming that figure is right and assuming for discussion's sake the 40,000 acres, the next basis would be developing a mitigation plan to offset the losses of the 40,000. That may include a refuge that needs that or it may need some additional water. I don't know what the passage would be now. Is the Bureau prepared to discuss it?

MR. MACH: Very definitely we would like to sit down and discuss it. By the same token, you cannot say yes or no and you cannot because we don't know what number we are talking about.

MR. YOUNG: I guess we could take another look. We are going to take one more look where the justification came from for the 100,000. We will have to look at the changes. The wetlands inventory isn't going to be available until after the spring?

MR. MACH: We have done a spring and a fall, the fall of 1977 and spring of 1978, but we don't have the report yet.

MR. YOUNG: When will the wetlands inventory be done?

MR. BASS: Not before the draft, but before the final.

MR. YOUNG: Let me suggest, Red, if we can not find any verification of our 100,000 or what breakdown on this, I am going to say we are going to have to look at the best available data we have. Right now you have approximately 40,000 you are talking about as a loss. I have no qualms about at least investigating right now, based on the varification from other studies after taking a look, assuming that figure is right of what type of mitigation would be appropriate and amount of water we need to offset that loss; to see if we are already going to be at an impass or not; make some meaningful movement on this particular thing, assess the impacts of the 40,000, what we would need, type of water supply, see if it even comes in the ballpark, and then go from that. Would that be acceptable?

MR. SHELDON: I have one question. Can we have some pumping done on No. 1 and No. 5 and find out whether. . .?

MR. BUETTNER: No, that is what I am just saying. There is a difference between capabilities of a pump and a well test on a short-term basis and the water availability. A pump test won't give you anything at all.

MR. YOUNG: What I would like to do is let Don take a look at the stuff. Then we can discuss the merits of those things at that time.

MR. SHELDON: Suppose this thing turns out to where we use the 40,000 acres using today's techniques and it turns out we need more than Mishak, then what happens?

MR. MACH: Then we have to go to the Secretary.

MR. YOUNG: We are going for a reanalysis. If we are going to reanalyze it we may have. . .

MR. MACH: The one thing that bothers me is a timeframe. Can we put it on a high priority? As I noted when I first started, we have in essence been given authority to initiate construction in 1979. We are under tremendous pressures from the State of Colorado. We are talking about hoping to initiate construction in September. Can we get this analysis say in the next 3 or 4 months?

MR. YOUNG: I don't know the magnitude of this. I could say as a goal we will try to do that. We can use that as a goal.

MR. MACH: Let me make an additional suggestion. Can you go back and in a week or 10 days give us an estimate of the time it might take?

MR. YOUNG: Yes, if we could have 2 weeks, we could discuss it and give you that estimate.

MR. MACH: Let me add one other thing to this thing. Can we file the draft EIS without objections from your agency and resolve these issues between the draft and the final? Think about that a little bit and we will discuss this after lunch.

MR. YOUNG: It is filing the draft, you are talking about withholding until you complete this?

MR. MACH: When we send it to the Secretary we need to state whether we have any unresolved issues within it. To say that we have an issue that we are going to try to resolve between now and the final.

MR. STEWART: If you don't make some issue of it in the initial submittal, how can you come back later?

MR. MACH: Let's think about it during lunch and we will talk about it after lunch.

BREAK FOR LUNCH AT 11:53 a.m. - RECONVENED AT 12:53 p.m.

MR. MACH: Jim suggested that we go on to the Alamosa question. We have pretty well talked about the Mishak.

There is one thing I mentioned to Jim at lunch that we don't have an answer on but our Solicitor has called to our attention. We will be pursuing it in an attempt to get a legal answer. If you read the authorizing act on the second page of it, section 104B of the act, it says "After the project or any phase thereof has been constructed and is operational, the Secretary shall make water available in the following listed order or priority:

"(1) To assist in making the annual delivery of water at the gaging station on the Rio Grande near Lobatos, Colorado, as required by article III of the Rio Grande compact: Provided, that the total amount of water delivered for this purpose shall not exceed an aggregate of six hundred thousand acre-feet for any period of ten consecutive years. . .

"(2) To maintain the Alamosa National Wildlife Refuge and the Mishak National Wildlife Refuge. . ." (And then it puts the limitations on the maximum amount of water to be delivered.)

"(3) To apply to the reduction and elimination of any accumulated deficit in the deliveries by Colorado as is determined to exist by the Rio Grande Compact Commission."

What our Solicitor is alerting us to is that this could possibly lock us into a sequence of delivery of water. The first being that 600,000 acre-feet in any 10-year period before any deliveries are made for mitigation or deficit retirement. This came as a suprise to us in that we had always assumed that there would be some proportionate sharing of water in the initial stages of the project. What our Solicitor is telling us is this may stop us from doing that, the Federal Government and anybody else involved in it. Congress said all of the water goes to the river until you fulfill the 600,000 acre-feet in any 10-year period. We don't have any formal opinion. This is again an informal verbal alert that the Act may set up these priorities and may create some problem.

MR. YOUNG: If that is true, when you come out with a formal opinion don't you have to go back to Congress?

MR. MACH: Well I am not sure. We would recommend haulting construction. We would go back for some additional flexibility.

MR. YOUNG: If that opinion came out, our position on that would be that we would insist that be resolved before construction.

MR. SHELDON: Did the solicitor say we must deliver the 600,000 acre-feet or the amount of water delivered shall not exceed the aggregate of 600,000 acre-feet in any 10 years?

MR. MACH: That is why we feel we are going to have to pursue it and get a formal legal opinion. He is telling us that could cause some problems.

MR. YOUNG: We need to know. Is there a way you can get that opinion before you file?

MR. MACH: Probably not before we file the draft but definitely before the final. It would take 30 to 90 days to get a formal opinion.

MR. YOUNG: That has a significant impact what you are saying there.

MR. MACH: We had always operated on the assumption that it would be proportionate.

MR. BUETTNER: The priorities were based on the old report.

MR. YOUNG: We will be interested when you request a filing on that. We will probably ask the Secretary to withhold until that is resolved.

MR. MACH: It says it shall not exceed. Maybe you can interpret that it doesn't have to be 600,000 every year. Maybe it just cannot exceed that. We will be pursuing it as quickly as possible to get a formal opinion. I am sure it will have to go back to Washington for final approval. We will let you know the outcome as soon as we know it. It caught us by surprise. The Act is a little bit confusing.

MR. SHELDON: The water that passes that gaging station is on its way to Mexico.

MR. MACH: Once it passes Lobatos it would be divided between Texas, Mexico, and the United States.

MR. MACH: It is that section 104B one through 4 that causes us the problem and we will try to get a clear indication as quickly as possible and let you know.

Okay, let's go on to Alamosa then.

MR. SHELDON: What is your proposal for Alamosa?

MR. MACH: Again, with a little background, in all of the documents in the green book we talk about 5,300 acre-feet to Alamosa, and it has been lumped into a general category of mitigation, never identified in any way. In the process of going from the 1960 report to the report sent in 1970, we did a reevaluation statement. Basically, that is simply going back in and updating all the cost and reanalyzing the project from an economic standpoint. Part includes allocation of costs to the various purposes, including mitigation and enhancement, so it becomes very clear what is under the 8972 provision, etc. In that process, our Regional Director wrote a letter to the Albuquerque Regional Office. In response to that inquiry as to what was mitigation and what was enhancement, we got a letter back from the Albuquerque office signed by W. E. Nelson as

Acting Regional Director stating that the 5,300 acre-feet of water for Alamosa was definitely for the purpose of mitigating those losses caused by the conveyance canal crossing the Alamosa Wildlife Refuge. That is the only thing we have been able to find in the record of the 5,300 acre-feet and why it was put in the project. That is essentially the background and that is all we have.

MR. YOUNG: What was that letter dated?

MR. SANDERS: June 10, 1970.

MR. MACH: Now, going back to the original concept we had in the green book, we had anticipated a conveyance canal essentially running along the base of Hanson's Bluff essentially the same alinement as the channel now but a manmade channel. There was a considerable amount of concern expressed at that time and also recently that that channel could, by crossing some of the wetlands and perhaps penetrating the confining layer that keeps the layer there, in essence drain those wetlands and cause significant impacts. With that in mind, we started looking at alternative alinements. We were doing this as a matter of course anyway. We did come up with an alinement that we could hold it up high enough so that instead of coming down that channel we would cut across the northwest corner of the refuge and we would in essence sever about two sections. That would be on the up side of the canal and the rest of the refuge would be on the down side. What we would propose initially is that

we would provide a turnout for the 5,300 acre-feet along that alinement and make the water available at that point. The problem would be that there would be this part of the refuge above the canal at a higher elevation than we would be turning out at. As I understand some of the others studied this at the last meeting. That is where we are at right now. We would like to resolve that issue of the canal alinement itself.

We have looked at going down the existing meandering channel and turning the water loose at the upper end and recollecting it at the lower end and measuring it and putting it into the river. We agree it could be done from an engineering standpoint. We have two serious problems that essentially tell us we cannot do it. The first is the water accounting process involved in there. There are waters now that flow to the Rio Grande and they naturally accrue into the Rio Grande and add to the water that goes on down the river. They are not measured but they exist. If we were to turn it loose at the upper end, then they would intermingle with these flows and the bookkeeping of what is Closed Basin salvage and what is normal runoff from the refuge would become impossible. It varies from year to year, depending on numerous things. The second aspect, and one quality that may be more important, is that the Rio Grande Compact has a very strict requirement on quanity and quality. It limits total dissolved solids to 350 parts per million and if it exceeds that the proportion of total positive ions shall not exceed 45 percent.

The waters on the refuge are not near 350 parts per million. They are probably in the range of 750 and maybe as high as 1,000. The Compact says that if the water quality does not meet those requirements as set forth in the compact, Colorado gets no credit for that water coming into the River. Consequently, Colorado is extremely interested in getting credit for every drop they put into the river to meet Compact commitments and help pay off the deficit. The problems this would create from a water quality control standpoint become a serious problem. The well fields as they are established our intent is that we would be monitoring these wells and by shifting pumping from various fields try to keep close control of the water quality to meet Compact requirements so Colorado would get full credit for water put into the river. We are very concerned that if we were to let it run down the channel uncontrolled, it would intermingle with the lesser quality water and quality would not meet requirements.

Those are the two reasons we feel we cannot turn the water loose down the existing channel, the water accounting and water quality problems.

MR. SANDERS: We have grabbed a lot of samples during our exploration drilling that lead us to be very apprehensive we are going to deliver water to the Rio Grande. We are barely going to make Compact commitments.

MR. STEWART: Let me discuss the two problems. The first one, if you measure at the upper end of the refuge the flows of water that you are pumping and at the channel below is a gaining channel anyway, then what does it matter, that in that you have measured, that you have put in that much water at the top of the refuge? Just because more comes out at the bottom, the accounting process doesn't have to be complicated.

MR. BUETTNER: You would have to show it to me.

MR. MACH: Let's illustrate it. As the river exists now you have the refuge here and the river coming down here. Under the present conditions, this meandering channel is a gaining stream and adds to the flows of the Rio Grande. At this point this in turn helps Colorado meet its commitments at Lobatos. So whatever the accretion or the additional water coming in here helps. Let's assume that we turn loose at the top 100 cfs per day. When we get and we measure the water, let's say you have 110. You would have a right to deplete some amount of that water and let's assume that was 5 cfs to meet the 5,300 acre-feet coming to the refuge. What we could say is that the 100 minus the 5, we needed 95 cfs to deliver the true amount that should go into the river. We actually delivered 110. If we subtracted the 95 from the 110, there was a 15 cfs gain. How do we know whether that was the actual gain? Had we not turned the water at the top, you may have had 35 delivered instead of 95. That

is the problem, we don't know. There is no way to keep records on this.

MR. FREEMAN: Get your average flow before you start.

MR. MACH: That depends on the particular year you are in.

MR. SHELDON: Right now the refuge is dry on the bottom end, and we could run it right straight through there. We didn't get any irrigation water since July 15 and all of the hunting areas are bone dry.

MR. BUETTNER: Let me expand on that. If you were to divert now under these circumstances, our 100 cfs, you would be filling up all those ponds. Why do you want to divert, to stablize those ponds so you don't have a year like this.

MR. SHELDON: If we don't use our 5,300 acre-feet -

MR. BUETTNER: Our opinion is it is unsolvable.

MR. SHELDON: In our opinion it is solvable because we will absorb all of our evapotranspiration losses out of the 5,300 acre-feet and we won't have a manmade conveyance system ruining the area. The only reason we are asking to do this is it is a natural channel and other than a few places there is no other change of the Alamosa Refuge and that is our only reason for doing that.

MR. MACH: What we are saying is we have the Rio Grand Compact Commission which is going to be looking at all the records, and they

are going to contend there were some normal or natural inflows. We are saying there is no way to keep track of it.

MR. SHELDON: Today there is no natural inflow right now. We can prove right now there is nothing coming in.

MR. MACH: What about the wet year?

MR. SHELDON: The same thing on it.

MR. MACH: The Compact Commission won't accept this as a reasonable accounting of all the water.

MR. SHELDON: We are saying we will actually take less than 5,300 because we are going to absorb the losses in the refuge.

MR. YOUNG: I have a couple other questions. We are talking 5,300, reanalysis of the new proposed -

MR. MACH: We would like to propose two alternatives, one would be to come across the upper corner. We appreciate that you don't want us to dig a canal along Hanson's Bluff and it is not a viable alternative.

MR. STEWART: If you put it across there would we still get the 5,300?

MR. MACH: Yes, very definitely. The second alternative would be that we bring the channel across and above the refuge and put a pump lift in and bring the water over above and stay out of the refuge.

If the 5,300 acre-feet is for mitigation, do we drop the 5,300 acre-feet of water?

MR. YOUNG: If that has no impact on the refuge, then no we would not need it.

MR. SHELDON: I am sure in the older records, Jim, that to deliver to the Alamosa Refuge is for mitigation on the lower end as well as going down through the refuge.

MR. YOUNG: Nelson does not say that, and it was done less than a year after the report came out.

MR. STEWART: If you took the original channel and made a determination ~~by~~ survey as to what ponding there might be in the natural channel there and went to the Compact Commission and said to them, "Will you accept a loss because of this ~~of~~ 5,300 acre-feet?" and telling them that it would probably be less than that, don't you agree that they would agree to it going down the natural channel there rather than cutting a man-made channel ~~across~~ and loosing 5,300 acre-feet? I don't see that there would be an accounting problem, especially if you went to the Commission and asked them? The water quality, if you measure the quality at the top and say this is the quality at the top?

MR. BUETTNER: We are charged to deliver to the original Compact quality water.

MR. STEWART: Because you are showing at the top what the quality is, just because it changes at the bottom - it changes from what happens in between.

MR. BUETTNER: The law says the stuff we deliver to the river has to be of these standards before it can be applied against the Compact. I will agree with you in principle that you can do some computations, except you have some fallacies on depletions in the interim, but we are still violating the law because the Compact says where we deliver the water.

MR. STEWART: But again you could go to the Commission and say "Do we have your permission to measure the quality at the top because -?" I don't see the problem.

MR. WEBER: Based on my experiences with the Compact Commissioners, you are going to have a hard time to convince them that is acceptable under the Compact.

MR. STEWART: I think it should be looked into. To us it would be much better to run it through that way and not disrupt the refuge if it can be done and the Compact is happy.

MR. MACH: We would throw out, as an alternative not to disrupt, the pump lift.

MR. SHELDON: And deliver the 5,300 acre-feet?

MR. BUETTNER: No.

MR. SHELDON: The project provides, reading No. 8 in the green book, it's the same one as in the 1960, and it says the 5,300 acre-feet will supplement the water we have there to assure we have 14,000 acre-feet for waterfowl purposes.

MR. MACH: The question is mitigation or enhancement.

MR. SHELDON: It is mitigation. It isn't enhancement. It's mitigation for losses, plus this also says, No. 9 from 1960, "That the project provide an estimated 5,300 acre-feet of water per annum, to supplement that available on the proposed Alamosa National Wildlife Refuge area, to assure a total supply of 14,000 acre feet per annum for waterfowl management purposes, and further that the collection system be so located as not to drain proposed refuge lands."

MR. MACH: The office who did the coordination.

MR. SHELDON: On page 24 of the green book, the next to the last paragraph, "Because of the importance of the San Luis Valley to waterfowl," is that it? It says "The lowermost reach of the main conveyance channel will pass through the Alamosa National Wildlife Refuge. Location and design of the channel should be planned cooperatively by the Bureau of Sport Fisheries and Wildlife and the Bureau of Reclamation to avoid impairment of refuge operations and if possible to improve the operation of the refuge." By improving the operation of the refuge if you go around that way we can utilize it throughout and it has improved our operation.

MR. MACH: The same report is to mitigate.

MR. SHELDON: That is water in addition to the Mishak.

MR. MACH: I don't disagree with that.

MR. SHELDON: The Mishak would have been another 5,300 acre-feet if we put all of the mitigaton on the upper end.

MR. MACH: The report said the impact would be these losses. Mishak would fully replace those and in addition add some incidental benefits. That is out of your own report. When they talk about Mishak, it would fully mitigate and add some incidental benefits.

MR. SHELDON: That is because of the intense management of the area. That is where those enhancement benefits come from.

MR. MACH: That is what I am saying, Mishak fully mitigates for the losses due to the project at that time. It also talks about 2,600 man-days of upland game hunting, 500 man-days of wildlife-oriented recreation for losses that Mishak is going to replace, 12,000 ducks, 2,600 man-days for game, 1,200 waterfowl hunting, and 500 wildlife-oriented recreation. And in addition, the incidental benefits and we don't argue whether it's mitigation or enhancement.

MR. SHELDON: An we will be able to do that with 12,500 acre-feet of water?

MR. MACH: Right, according to this report. Then the question came in our mind what is the 5,300 acre-feet for at Alamosa and the only thing we had was the 1970 letter.

MR. SHELDON: No, the 1960 letter.

MR. YOUNG: The 1970 interpreted that. It looks like they are talking about losses resulting from the channel coming through the refuge. That is what the letter looks like.

MR. FREEMAN: Does that supersede the Secretary's report?

MR. YOUNG: It interprets what is in the report. We are telling the Bureau of Reclamation what it means. They asked us for an interpretation. They are interpreting it one way and I am not sure we are interpreting it the same way.

MR. STEWART: The way I read it is it says it is mitigation for the losses to the refuge habitat by the construction of the channel through the refuge.

MR. SANDERS: We are looking at a 6-mile channel here versus a 2-mile channel over here.

MR. STEWART: We are here to work things out, and if something like this could be worked out to the benefit of the refuge and the Commission would go along with it, why would Reclamation object to it?

MR. MACH: I would be willing to explore with the Compact Commission the possibility of moving the measuring point to the upper end, but I would almost state they would not agree to it. What I would like to do today is we have the other two alternatives, and one is to put in a pump lift and stay totally out of the refuge. If the 5,300 is for mitigation for damages to the refuge, if we put in the pump lift we would not deliver the 5,300. I am looking at the economic tradeoff. The cost of the pump lift would be about the same.

The canal dimensions are a 12-foot bottom, 5 feet deep, and say a 2 to 1 slope and approximately 26 to 32 feet across the top. We would buildt an O&M road along one side of it. The road width would be something like 16 feet wide. The actual right-of-way would be 20 acres.

MR. YOUNG: Putting that through there would cause significant problems for any distribution.

The Bureau will contact the Compact Commision to determine if they would accept the proposal to measure at the top of the original conveyance canal but Darrell holds no hope of them going along with this proposal.

MR. BUETTNER: I think we could design a program where in a wet year when you don't need the water we could put it all in the river. Then some years you may need more than the 5,300 and you could get more then.

MR. SANDERS: Would you have to clear this with the Compact?

MR. MACH: The law talks about a 10-year running average.

MR. YOUNG: Is that a viable alternative for us to consider or not?

MR. BUETTNER: I would say what are your priorities? If this is more important, and this is under the supposition we are not going to have our canal alinement down here.

MR. YOUNG: What I propose is that we take this back to our people. The flexibility has some appeal and the fact that in a wet year we don't have to use it and we could add that to our account sounds good.

MR. BUETTNER: I don't think the law says it, but I think it would. The capabilities of the system, this is at the end of our canal.

MR. YOUNG: Would we need the Solicitor's opinion on that particular apsect?

MR. MACH: I think so and I am a little concerned about it says, "Provided that the amount of water delivered shall not exceed 5,300 acre-feet annually."

MR. YOUNG: How do we determine the annual basis?

MR. MACH: I think they would interpret it as saying you cannot deliver more than 5,300 acre-feet per year.

MR. STEWART: If you clear it through the Commission that you want to take 10,000 one year and none the next year, not to exceed 5,300 annually?

MR. SANDERS: You would probably have to bounce it off both parties.

MR. MACH: I think the flexibility would be good if we can go that way.

MR. STEWART: I like having the option of putting it in several places and using our other water.

MR. MACH: The location of the turnout would be no problem. It could be located anywhere along the canal. Our critical thing is tentatively you would not have a lot of problem with that alinement if the flexibility could be varied in taking the amount of water.

MR. YOUNG: That is the thing we are going to seriously consider now.

MR. SANDERS: What would happen if you allocated some of the water designated for Mishak to Alamosa or water from ~~Alta~~ Monte Vista? What would your ideas be on that?

MR. YOUNG: Darrell and I talked about that at lunch. We will talk this over with our people and will discuss again.

MR. MACH: If we were to seriously consider taking water to Monte Vista we feel we would have to have Congressional authorization.

MR. SHELDON: To change to Mishak down here we would probably have to do the same.

MR. MACH: Probably, but we are not sure.

MR. YOUNG: Where do we stand from here, there are a lot of things hanging?

MR. MACH: Why don't we pull it all together again. As I understand, we agreed this morning on the Mishak thing we are going to look at reevaluating now under today's conditions which would involve the wetlands and you had no real feel how long that might take.

MR. YOUNG: We said in 2 weeks we could probably come up with an estimate of funds and a timeframe of what a reanalysis, using a concept of the minimum amount and impacting 40,000 acres, assuming that is substantiated by the other studies. At this time, I guess I want to reemphasize the importance of the Solicitor's opinion on these priorities. I have a strong feeling right now that the Service's position as far as the draft EIS is concerned is we are going to recommend probably unless we get some other feeling to withhold filing that thing until we have a determination and see which way we can go. If that does come up that is No. 1, and we will have to have a complete look into how we are going to approach it.

MR. MACH: We will immediately check on that. Assuming that analysis is favorable, that we can deliver water, that we don't have to deliver the 600,000 first, then we would like to have some consideration on your part and further discussions at a later date on how we can file the draft and do some of this work simultaneously. This avenue on the Alamosa question, we are to explore with the Compact Commissioners the possibility of the measuring of both the quantity and quality at the upper end of the refuge and that water be allowed through the refuge, and the accounting would be done essentially at the upper end and you, as FWS, would guarantee that such water would go out the other end as came in at the top.

MR. SHELDON: No. That we would still get our 5,300 acre-feet. We would absorb all of the losses on the 5,300 acre-feet. We are not trading off. I don't think that was ever indicated.

MR. MACH: I am confused when you say you would absorb all of the losses.

MR. SHELDON: If we use 5,300 acre-feet, how much is lost to consumptive use?

MR. WEBER: The entire amount.

MR. SHELDON: No, there is return flow to the river.

MR. MACH: When I heard you say you would make up any of the losses, I thought you were saying you would deliver the same amount at the lower end.

MR. YOUNG: You are going to explore with the Commission about making the point of the thing up above, quantity and quality, and the accounting procedures.

We have two considerations for your alternative in lieu of that proposal and one is cutting across the corner of the refuge and delivering 5,300 acre-feet with the possiblity you are going to explore where we can accumulate or subtract. Then the other alternative is to just exclude us all together.

MR. MACH: One aspect of the one going around is if we go totally around we could still make 5,300 acre-feet available, but it would become an enhancement and there would be cost sharing. It wouldn't be for mitigation but for enhancement.

MR. SHELDON: Providing we can't come up with the substantive data that this is water over and above what would be lost because they go across the refuge. I am sure they have to be there some place.

MR. MACH: Going back briefly to the Mishak, we would be very interested in finding out where the original 100,000 acres came from.

MR. YOUNG: We will check on that.

MR. MACH: We are still very interested in getting that backup data. I think that is essentially where we are at on both Mishak and Alamosa.

MR. WEBER: Are we going to have a review of the hydrology?

MR. YOUNG: It will come back with our cost estimated and what it's going to take. We will get an estimate from Don and his people and in 2 weeks, hopefully, we will have some kind of estimate of time and money needed to do a reanalysis of this thing based on new data and review.

MR. SHELDON: Did I understand that we are not going to review any surface data?

MR. MACH: We don't have any problem with it. We are not going to salvage any, so we don't care. We only proceeded far enough into the surface water situation to make a decision as to whether it was economical for us. At that point we determined it was not economical and did not review it any further. If you want to, you can review it.

MR. SHELDON: What is coming into the Mishak?

MR. MACH: What little data we have we can provide to you.

MR. YOUNG: The last point is the conveyance channel for the fishery.

MR. MACH: Mainly the cobbles.

MR. YOUNG: What I am going to have to do is you have some correspondence with the Colorado Division of Wildlife. This is totally an enhancement feature. They are willing to pick up the capital costs, but were not willing to pick up the O&M. We will rediscuss this particular aspect in view of the new information and see where we can go with that particular point. I was not aware they had refused to pick up the O&M expenses.

MR. MACH: We just got it last week ourselves. It was an interdepartmental thing.

MR. YOUNG: I will get more clarification from the state on that. We are going to have to get back to the state and reanalyze.

MR. MACH: Our main problem from the engineering standpoint is putting the cobbles in the canal itself. The fish is no problem.

MR. YOUNG: If they were willing to cost share -

MR. MACH: The cobbles will still give us problems.

MR. YOUNG: We will rediscuss this issue with them.

MR. MACH: One other aspect would be the safety and welfare to the public and access to the canal. Are you going to have to provide some facilities for sanitation, parking spaces, or limited acces or will you let them fish anywhere along the canal? How are they going to get out if they fall in?

MR. FREEMAN: By restricting access, you would be restricting some fairly good hunting areas.

MR. MACH: We would just restrict access to the canal itself, not to the adjacent areas. California fenced their aqueduct so you could not get to it and ever so often they did allow access for the public to go fishing.

MR. YOUNG: My other question is with that canal in there there is going to be demand for a fishery. What happens to the foresters? Where is liability?

MR. MACH: That is part of our concern on the safety aspect in case of a drowning.

MR. SANDERS: We are presently talking to Colorado Parks.

MR. STEWART: Could we say rather than 2 weeks, the first of December to respond?

MR. MACH: I guess I would like to put as much pressure on you as I can. We are on an extremely tight schedule.

MR. YOUNG: In 2 weeks we may only give you a partial answer.

MR. MACH: We would appreciate as much information in 2 weeks as we can possibly get. We would like to get the draft filed by the first of January if there is any way possible. Contact Jack Sanders for any information you need and he in turn would get the information

for hydrology or environmental or whatever or refer you to the proper person. He would coordinate the effort with our staff.

MR. SHELDON: One question on the canal or whatever is going across the refuge, I am assuming that it is lined with compacted dirt.

MR. MACH: We don't have a final decision on that. We are trying to avoid concrete because of the cost, but the final decision really won't be made until we actually submit the design data to our designers and they actually put the design together. It will depend on materials investigations. We are probably looking at a year from now before we have that final decision. The factors to influence that decision are the amount of leakage in the canal with natural earth lining. Then we would go to a clay-type earth material if we can find a sufficient amount.

One caveat or qualification on the line, we would be willing to hold open is that when we get into the final designs we will actually go out and survey. The actual layout we can adjust in the field depending on the surveying at the time it is layed out.

MR. SANDERS: On the draft EIS, we would very much like to resolve the conflict in here. Could we rewrite a section?

MR. YOUNG: Right now, until that determination by the Solicitor, we are not going to -